Comput. Math. Applic. Vol. 15, No. 9, pp. 795–796, 1988
Pergamon Press plc. Printed in Great Britain

BOOK REPORTS

The Book Reports section is a regular feature of *Computers & Mathematics with Applications.* It is an unconventional section. The Editors decided to break with the longstanding custom of publishing either lengthy and discursive reviews of a few books, or just a brief listing of titles. Instead, we decided to publish every important material detail concerning those books submitted to us by publishers, which we judge to be of potential interest to our readers. Hence, breaking with custom, we also publish a complete table of contents for each such book, but no review of it as such. We welcome our readers' comments concerning this enterprise. Publishers should submit books intended for review to the Editor-in-Chief,

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VLSI Array Processors. By S. Y. Kung. Prentice-Hall, Englewood Cliffs, N.J. (1988). 667 pages. $42.67.

Contents:
1. An overview
2. Signal and image processing algorithms
3. Mapping algorithms onto array structures
4. Systolic array processes
5. Wavefront array processors
6. System and software design
7. Implementation of array processors
8. Applications to signal and image processing

Fuzzy Sets, Uncertainty and Information. By George J. Klir and Tina A. Folger. Prentice-Hall, Englewood Cliffs, N.J. (1988). 355 pages $53.25.

Contents:
1. Crisp sets and fuzzy sets
2. Operations on fuzzy sets
3. Fuzzy relations
4. Fuzzy measures
5. Uncertainty and information
6. Applications

Applied Linear Algebra. By Ben Noble and James W. Daniel. Prentice-Hall, Englewood Cliffs, N.J. (1988). 521 pages.

Contents:
1. Matrix algebra
2. Some simple applications and questions
3. Solving equations and finding inverses: methods
4. Solving equations and finding inverses: theory
5. Vectors and vector spaces
6. Linear transformations and matrices
7. Eigenvalues and eigenvectors: an overview
8. Eigensystems of symmetric, Hermitian, and normal matrices, with applications
9. Eigensystems of beneral matrices, with applications
10. Quadratic forms and variational characterizations of eigenvalues
11. Linear programming

Artificial Intelligence & Instruction. Applications and Methods. Edited by Greg P. Kearsley. Addison-Wesley, Reading, Mass. (1987). 351 pages. $32.25.

Contents:
1. Overview
2. Intelligent CAI: old wine in new bottles, or a new vintage?
3. PROUST: an automatic debugger for Pascal programs
4. Micro-SEARCH: a "shell" for building systems to help students solve nondeterministic tasks
5. Mathematical microworlds and intelligent computer-assisted instruction
6. STEAMER: an interactive, inspectable, simulation-based training system

7. Artificial intelligence application to maintenance training
8. Intelligent job aids: how AI will change training in the next five years
9. Methodology for building an intelligent tutoring system
10. Theoretical frontiers in building a machine tutor
11. The TEACHER'S APPRENTICE: designing an intelligent authoring system for high school mathematics
12. Development strategies for ICAI on small computers
13. Authoring systems for ICAI

Heuristics: Intelligent Search Strategies for Computer Problem Solving. By Judea Pearl. Addison-Wesley, Reading, Mass. (1984). 382 pages. $47.50.

Contents:

1. Heuristic and problem representations
2. Basic heuristic-search procedures
3. Formal properties of heuristic methods
4. Heuristics view as information provided by simplified models
5. Abstract models for quantitative performance analysis
6. Complexity versus precision of admissible heuristics
7. Searching with nonadmissible heuristics
8. Strategies and models for game-playing programs
9. Performance analysis for game-searching strategies
10. Decision quality in game searching

Expert Systems: Techniques, Tools, and Applications. By Philip Klahr and Donald A. Waterman. Addison-Wesley, Reading, Mass. (1986). 441 pages. $40.95.

Contents:

1. Artificial intelligence: a Rand perspective
2. ROSIE: a programming environment for expert systems
3. ROSS: an object-oriented language for constructing simulation
4. Developing expert systems to combat international terrorism
5. Models of legal decision making
6. TATR: a prototype expert system for tactical air targeting
7. TWIRL: tactical warfare in the ROSS language
8. Exemplary programming: applications and design considerations
9. Knowledge acquisition, knowledge programming, and knowledge refinement
10. INFERNO: a cautious approach to uncertain inference
11. Distributed problem solving for air fleet control framework and implementation

Introduction to Artificial Intelligence. By Eugen Charniak and Drew McDermott. Addison-Wesley, Reading, Mass. 701 pages. $44.25.

Contents:

1. AI and internal representation
2. Lisp
3. Vision
4. Parsing language
5. Search
6. Logic and deduction
7. Memory organization and deduction
8. Abduction, uncertainty and expert systems
9. Managing plans of action
10. Language comprehension
11. Learning

Artificial Intelligence & Statistics. Edited by William A. Gale. Addison-Wesley, Reading, Mass. 1986. 418 pages. $43.25.

Contents:

1. Overview
2. A statistical view of uncertainty in expert systems
3. Knowledge, decision making, and uncertainty
4. Conceptual clustering and its relation to numerical taxonomy
5. Learning rates in supervised and unsupervised intelligent systems
6. Pinpointing good hypotheses with heuristics
7. Artificial intelligence approaches in statistics
8. REX review
9. Representing statistical computations: toward a deeper understanding
10. Student Phase 1—a report on work in progress
11. Representing statistical knowledge for expert data analysis systems
12. Environments for supporting statistical strategy
13. Use of psychometric tools for knowledge acquisition: a case study
14. The analysis phase in development of knowledge based systems
15. Implementation and study of statistical strategy
16. Patterns in statistical strategy
17. A DIY guide to statistical strategy
18. An alphabet for statisticians' expert systems